

ABSTRACT

Optomechanical Design of Nine Cameras for the Earth Observing Systems Multi-Angle Imaging Spectral Radiometer, AM Platform.

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The Multi-Angle Imaging Spectral Radiometer (MISR) is a push-broom instrument that uses nine cameras to collect data at nine different angles through the atmosphere. The science goals are to monitor global atmospheric particulates, cloud movements, and vegetative changes. The camera optomechanical requirements were: to operate within specification over a temperature range of -10°C to 40°C ; to survive a temperature range of -40°C to 80°C ; to survive launch loads and on-orbit radiation; to be non-contaminating both to itself and to other instruments; and to remain aligned throughout the mission. Each camera has its own lens, detector, and thermal control. The lenses were refractive, thus passive thermal focus compensation and maintaining lens positioning and centering were dominant issues. Because of the number of cameras, modularity was stressed in the design.

The proposed paper will describe the final design of the cameras, the driving design considerations, and the results of qualification testing.